PD Formats, Program Integration and On-Line Courses

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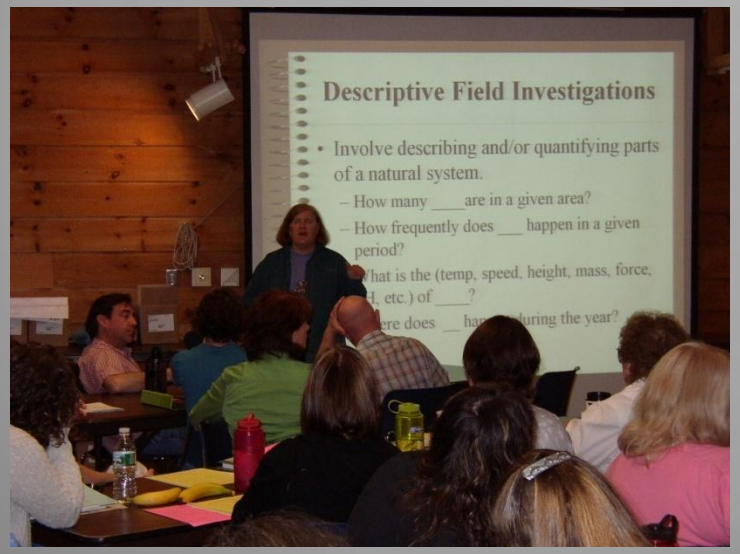
NCES NH GLOBE Partnership
NSTA North America Regional Meeting
March 17, 2010

PD Formats

- Combining Elementary GLOBE and protocol training in 6 separate workshops
  - Creating and Studying Your School Site aka Student Research (Thursday/Friday)
  - Atmosphere (Friday/Saturday), (May 20/21)
  - Seasonal Change (March 5/6)
  - Earth System Science/Land Cover (January 21/22)
  - Hydrology (TBD)
  - Soil (June 3/4)

PD Formats

- K-4 Teachers
  - Friday night 4-7:30pm Elementary GLOBE
  - Saturday morning 9-12:00pm
    - Observe and record observations about “sphere”
    - What questions do we have about this “sphere?”
    - What can we measure to learn more?
    - Researchable questions…what protocols do you want to learn?
    - Protocol training
    - What can we find out using the data?



PD Formats

- 5-12 Teachers
  - Share morning session with K-4 teachers
  - 12:30-3:30pm Let's take it further
    - Advanced protocols/learning activities
    - Data analysis
    - Increase complexity of research questions

PD Formats

Earth as a System/Land Cover GLOBE Workshop
January 22, 2010

Introductions/Inquiry Questions

- Name, grade, school. What do you teach? Why are you here?
- What kind of land cover did you see on the way in?
- Why would we want to study land cover?
- Name one way land cover changes over time.
- What do you want to know/study about land cover?

Foundation Activities

- Orientation to how GLOBE 'numbers' pages
- Land Cover/Biology Investigation at a Glance
  - Introduction
- Zoom by Istvan Banyai
- Side to Top Views
  - Odyssey of the Eyes Beginning
  - Site Seeing Beginning

Field Work

- Site Selection
- Investigation Instruments
  - Modified UNESCO Classification (MUC) System (pg. 1-12)
    - Practice Examples
    - MUC System Glossary
  - Densiometer (pg. 13-14)
  - Clinometer (pg. 15-18)
    - Clinometer Sheet
    - Table of Tangents
  - Pacing (21.2 m = # steps = # of samples) (pg. 19-20)
  - Tape Measure (pg. 21)
  - Investigation Instrument Assessment (pg. 22)
- GPS Protocol
  - Compass (pg. 7)
  - Field Guide
  - Data Sheet
- Land Cover Sample Site
  - Field Guide
  - Data Sheet
- Biometry Protocol
  - Ground and Canopy Cover
    - Field Guide
    - Data Sheet
  - Tree Height
    - Simplified Height Field Guide & Data Sheet
    - Field Guide & Data Sheet

Classification

- Bird Beak Activity
- Leaf Classification

GLOBE Intro Powerpoint

Evaluations for K-4 Teachers/Lunch for 5-12 Teachers

Field Activity

- Site Seeing Intermediate
- LC1: Connecting Parts of the Study Site

Earth as a System

- RC2: Effects of Inputs and Outputs on a Region
- Inputs and Outputs
- Closed vs. Open Systems
- Poster Activities (2007 and 1987 Posters and Activities)

Evaluations for 5-12 Teachers

PD Format

Seasonal Change GLOBE Workshop
March 6, 2010

Introductions/Inquiry Questions

- Name, grade, school. What do you teach? Why are you here?
- How do you know that the seasons are changing?
- How could you measure seasonal change?
- What do you want to know/study about seasonal change?

Foundation Activities

- Orientation to how GLOBE 'numbers' pages
- Earth System Science Investigation at a Glance
  - Introduction (starting pg. 9-27)
- Seasons and Phenology
  - Introduction
  - Introduction
- P1: Green-up Cards
- P2: A Sneak Preview of Budburst
- P3: A First Look at Phenology

Field Work

- GPS Protocol
  - Field Guide
  - Data Sheet
- Budburst Protocol
  - Budburst Site Definition Sheet
  - Budburst Data Sheet
- Green-up Protocol
  - Green-Up and Green-Down Site Definition Sheet
  - Tree and Shrub Green-Up Data Sheet
  - Grass Green-Up Data Sheet
- Hummingbirds Protocol
  - Ruby-throated Hummingbird (RTHU) Site Definition Data Sheet
  - RTHU Hummingbird Sighting Protocol Data Sheet

Websites – Budburst & Operation Ruby Throat

GLOBE Intro Powerpoint

Evaluations for K-4 Teachers/Lunch/PD Certificates

Seasonal Change

- S1: What Can We Learn About Our Seasons?
- S2: What Are Some Factors That Affect Seasonal Patterns?
  (Note: Use Seasons Background PowerPoint to cover major objectives of this activity and the previous one.)
- S3: How Do Seasonal Temperature Patterns Vary Among Different Regions of the World?
  (Note: This has some good descriptions of different ways to look at temperature data on the GLOBE website.)
- S4: Modeling the Reasons for Seasonal Change
  (Note: This is a difficult activity and there are probably better ones but the participants felt that the 3-D model of the Earth was helpful in discussions and could be used in many different ways. Good protractor for Earth's tilt.)
- In groups, teachers complete and discuss the following activities:
  - P5: Seasonal Change on Land and Water
  - P6: Global Patterns in Green-up and Green-down
  - P7: Temperature and Precipitation as Limiting Factors in Ecosystems
    (Note: This activity involves pre-teaching and higher level vocabulary.)
  - Topics to share with rest of participants:
    - Describe activity
    - Value to classroom
    - Any modifications or implementation points

Evaluations for 5-12 Teachers/PD Certificates

Addendum:

- For Green-Down Concepts
  - P4: A Beginning Look at Photosynthesis- Plants Need Light
  - P5: Investigating Leaf Pigments
- Green-Down Protocol
  - Green-Up and Green-Down Site Definition Sheet
  - Tree, Shrub, and Grass Green-Down Data Sheet

http://nhglobenetwork.ning.com/

PD Format

Follow-Up

Program Integration

Project HOME
Homes for Wildlife in the Schoolyard

New Hampshire Education and Environment Team

PLT
NEW HAMPSHIRE PROJECT LEARNING TREE

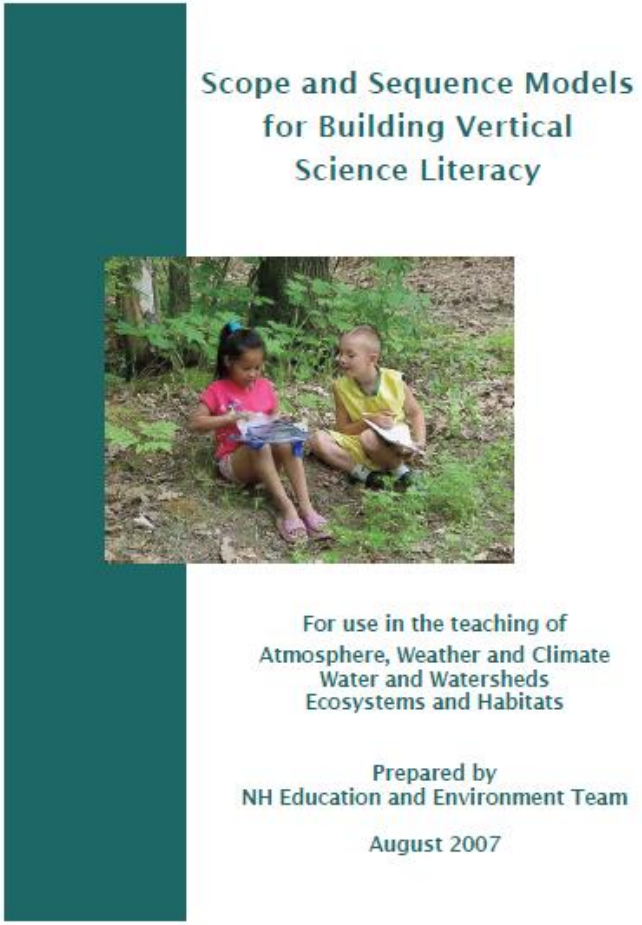
project WILD

PROJECT WET
Water Education for Teachers

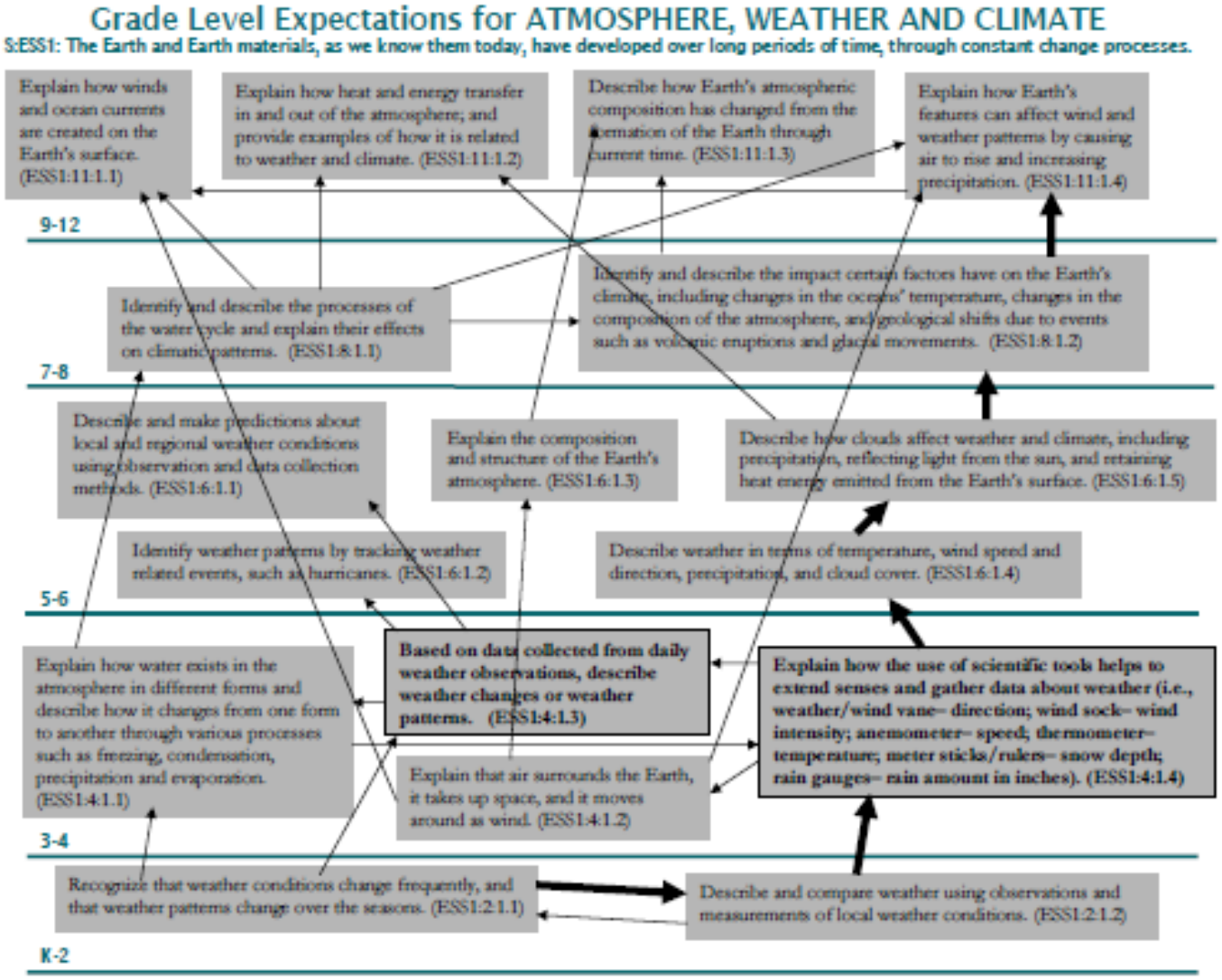
The GLOBE Program

USDA Forest Service Conservation Education

Program Integration



Program Integration



Program Integration

Atmosphere, Weather and Climate Scope and Sequence

S:ES81: The Earth and Earth materials, as we know them today, have developed over long periods of time, through constant change processes.

Kindergarten – Grade 2

ESSENTIAL QUESTION: HOW IS THE WEATHER DIFFERENT FROM SEASON TO SEASON?

Frameworks	Science Process Skills		Activities	Assessment
ESS1:2:1.1 Recognize that weather conditions change frequently, and that weather patterns change over the seasons. ESS1:2:1.2 Describe and compare weather using observations and measurements of local weather conditions.	SPS1 • Making Observations and Asking Questions • Conducting Scientific Investigations • Representing and Understanding Results of Investigations SPS2 • Nature of Science • Models and Scale • Patterns of Change • Form and Function SPS3 • Collaboration in Scientific Endeavors • Common Environmental Issues, Natural Resources Management and Conservation SPS4 • Information and Media Literacy • Communication Skills • Critical Thinking and Systems Thinking • Problem Identification, Formulation, and Solution • Interpersonal and Collaborative Skills • Self Direction • Accountability and Adaptability • Social Responsibility	Pre-Field Experiences	**Morning Calendar** to track daily weather. Most elementary schools use this activity already to track the daily weather. **Cloud Fun** (Elementary GLOBE). Students identify cumulus clouds and observe the weather on days when they see cumulus clouds.	**Cloud Fun.** Complete the Cloud Fun Student Activity Sheet.
		Field Experiences	**The Colors of the Seasons** (Elementary GLOBE). Students observe the colors of the seasons and record them for comparison at the end of the school year. **Adopt-A-Tree** (FLT). Students draw picture of a native tree and its habitat including the sky, clouds, etc. each season.	**The Colors of the Seasons.** Class discussion on colors that were found in each season. **Adopt-A-Tree.** Students create a book or write an essay about their tree.
		Post-Field Experiences	Students chart the number of days of each weather type per month and season. Share these data with another school in New England.	
		Culminating	**A House of Seasons** (WET). Students observe the role of water in each of the seasons. **Adopt-a-Tree** (FLT). Students "adopt" a tree, deepening their awareness of individual trees over time.	**A House of Seasons.** Students draw seasons, sort pictures of different season, create a collage of seasons and/or compare water in each season. **Adopt-a-Tree** (FLT). Students describe a tree, its relationships to its surroundings (in this case, the weather), and put together a book about the tree through the seasons.

Project HOME extensions

- Plant native plant species that will provide habitat cover which will protect wildlife from weather.

Integration with other subjects

- Art (drawing, colors) and Math (graphing, counting)

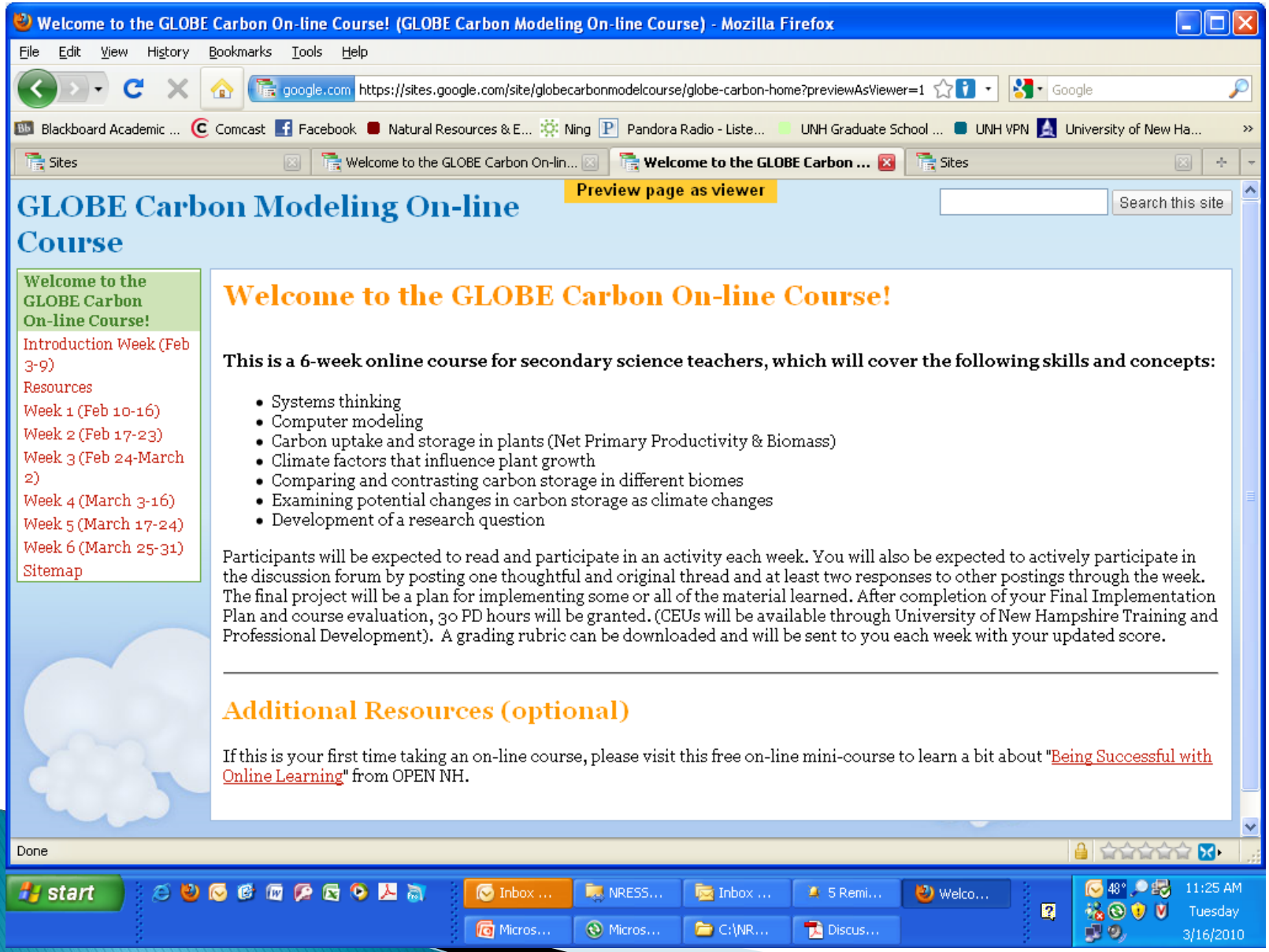
Additional resources

- NatureScope's *Wild about Weather*, "Weather Scavenger Hunt" and "Weather Watcher" (National Wildlife Federation)

Program Integration

- **Building Vertical Science Literacy, A Math Science Partnership**
- http://www.nhplt.org/programs/math_science_partnership/
  - On the bottom of the page is the full, downloadable Scope and Sequence

On-Line Courses



On-Line Courses

GLOBE Carbon Modeling On-line Course

Preview page as viewer | Search this site

Week 1 (Feb 10-16)

Reading

- NPP-Biomass Model Teacher Guide (NPP-Biomass Model_TeacherGuide_09-08-09.doc).
  - Includes:
    - The background information presented in the model story (**skip** this section because you will read the "model story" as an activity).
    - A 5E outline for suggestions on classroom implementation.
    - A preview of the activities you will complete as part of this course (found in the Elaborate section).
    - Sample questions that can be used for student assessment.

Activities

GLOBE Activity:

- iSee Player Tutorial
  - Download & install the iSee Player from www.iseesystems.com.
  - Open and follow the iSee_Player_Tutorial.STM to learn about the model's functionality (Found in the "Tutorials" folder after downloading the iSeePlayer).
    - Notice how the tutorial relates model capability back to the systems concepts in the Paperclip Factory Analogy from the Introduction Week
    - **Note:** If you need assistance with download, installation, or opening the tutorial follow the directions on slides 6 & 7 of ModelingSlides.ppt (from last week's additional resources).
- NPP-Biomass Model Story
  - Unzip/decompress NPP-Biomass.zip
  - Open the iSee Player
  - File--> open NPP_Biomass-Model_1_27_10.STM
  - Print NPPModel_Worksheet1_1-22-10.doc
  - Follow the instructions on Worksheet 1.

Implementation Guide:

- Complete Part 1 of the Implementation Guide.

Discussion

In the discussion board (http://groups.google.com/group/**globe-carbon-modeling-on-line-course**), post one original thread to answer the following question(s). Also respond to two other posts from your classmates.

- What is one concept or understanding you gained from this week's reading or activity? What is a lingering question you still have?

Additional Resources (optional)

- Websites/Resources - Biome Definitions & Global Biome Map:
  - World Wildlife Foundation http://www.worldwildlife.org/science/ecoregions/item1267.html
    - Olson, D.M. et al. 2001. Terrestrial Ecoregions of the World: A New Map of Life on Earth. BioScience. Vol 51(11), 933-938.

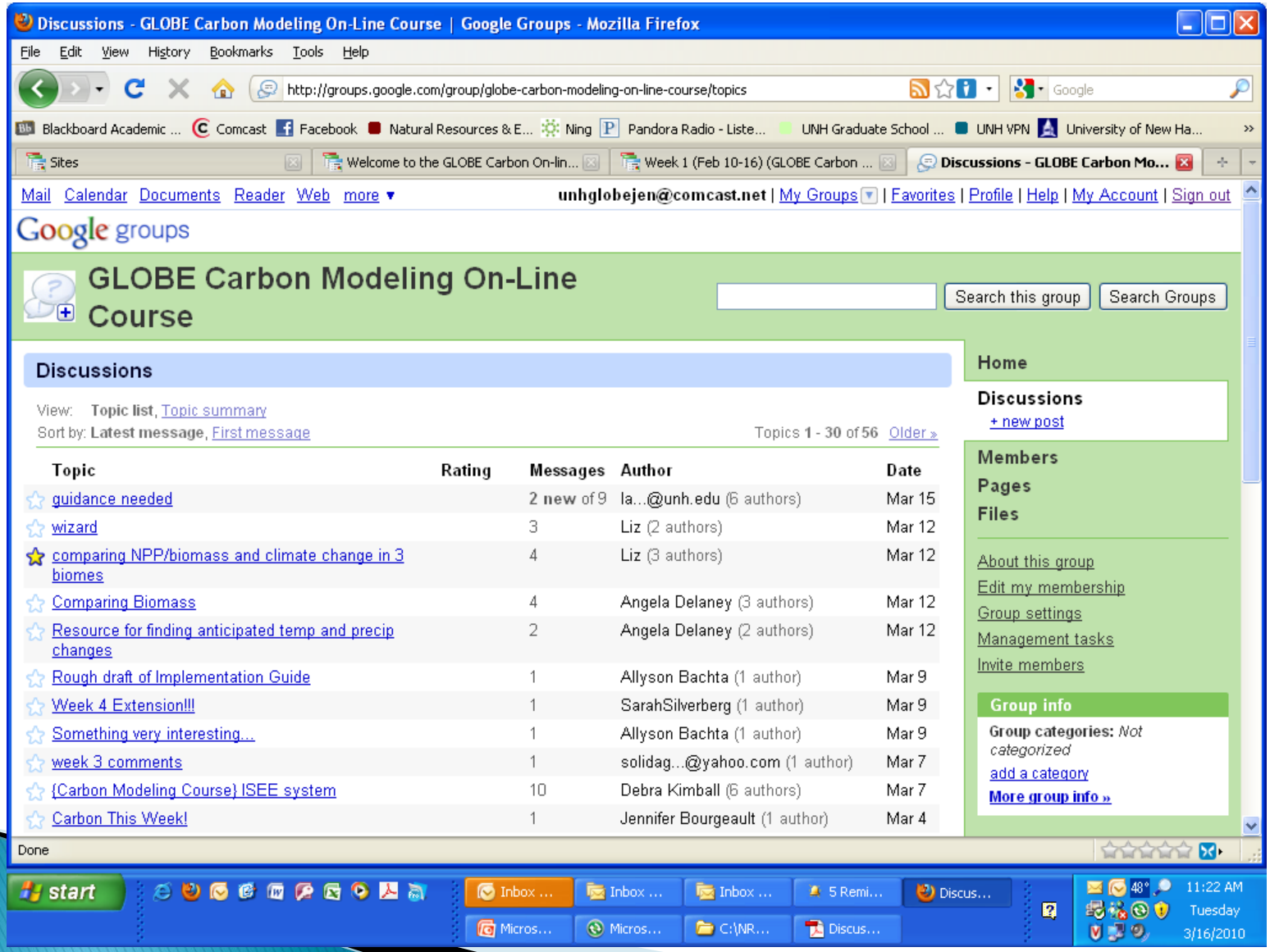
Attachments (3)

NPP-Biomass Model_TeacherGuide_09-08-09.doc - on Feb 1, 2010 3:37 PM by Sarah Silverberg (version 1)
756k Download

NPPModel_Worksheet1_1-22-10.doc - on Jan 29, 2010 11:40 AM by Sarah Silverberg (version 3 / earlier versions)
32k Download

NPP_Biomass-Model.zip - on Mar 5, 2010 11:36 AM by Sarah Silverberg (version 2 / earlier versions)
3588k Download

On-Line Courses



On-Line Courses

- MSP Follow-Up
  - 3-4 week courses
    - Week 1: Related Reading/Video
    - Week 2: Discussion
    - Week 3: Implementation Plan
    - Week 4: Final Plan
  - Courses
    - Inquiry-Based Learning
    - Science Notebooks/Journals
    - Data Sets/Data Analysis/Using Data

Just Posted:

GLOBE Carbon Cycle Workshop

August 17–19, 2010